



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-1167; Project Identifier AD-2021-00823-E; Amendment 39-22034; AD 2022-09-14]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2019-22-05, which applied to all General Electric Company (GE) CF34-8C model turbofan engines. AD 2019-22-05 required initial and repetitive inspections of the operability bleed valve (OBV) fuel tubes, OBV bleed air manifold link rod assemblies, and the OBV fuel fittings. AD 2019-22-05 also required replacement of OBVs or related OBV link rod hardware that fail inspection. This AD was prompted by multiple reports of fuel leaks, some leading to engine fires, which have occurred as a result of malfunctions related to the OBV. Additionally, the manufacturer has redesigned the OBV, which terminates the need for the repetitive inspections. This AD requires initial and repetitive inspections of the OBV fuel tubes, OBV bleed air manifold link rod assemblies, and the OBV fuel fittings installed on GE CF34-8C model turbofan engines. This AD requires replacement of OBVs or related OBV link rod hardware that fail inspection. As a terminating action to the repetitive inspections, this AD requires replacement of certain OBVs installed on GE CF34-8C model turbofan engines. This AD also requires replacement of certain OBVs installed on GE CF34-8E model turbofan engines. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain other publication listed in this AD as of December 23, 2019 (84 FR 63569, November 18, 2019).

ADDRESSES: For service information identified in this final rule, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ge.com; website: <https://www.ge.com>. You may view this service information at the Airworthiness Products Section, Operational Safety Branch, FAA, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1167.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-1167; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Scott Stevenson, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7132; fax: (781) 238-7199; email: Scott.M.Stevenson@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2019-22-05, Amendment 39-19784 (84 FR 63569, November 18, 2019), (AD 2019-22-05). AD 2019-22-05 applied to all GE CF34-8C1, CF34-8C5, CF34-8C5A1, CF34-8C5B1, CF34-8C5A2, and CF34-8C5A3 (CF34-8C) model turbofan

engines. The NPRM published in the *Federal Register* on December 29, 2021 (86 FR 73997). The NPRM was prompted by multiple reports of fuel leaks, some leading to engine fires, which have occurred as a result of malfunctions related to the OBV. Since the FAA issued AD 2019-22-05, the manufacturer redesigned the OBV, which terminates the need for the repetitive inspections of the OBV fuel tubes, OBV bleed air manifold link rod assemblies, and the OBV fuel fittings. Additionally, the FAA determined that GE CF34-8E2, CF34-8E2A1, CF34-8E5, CF34-8E5A1, CF34-8E5A2, CF34-8E6, and CF34-8E6A1 (CF34-8E) model turbofan engines are susceptible to the same unsafe condition as the CF34-8C model turbofan engines, and therefore, added the GE CF34-8E model turbofan engines to the applicability of this AD. GE published service information specifying procedures to replace certain OBVs installed on GE CF34-8C and CF34-8E model turbofan engines. In the NPRM, the FAA proposed to continue to require initial and repetitive inspections of the OBV fuel tubes, OBV bleed air manifold link rod assemblies, the OBV fuel fittings installed on GE CF34-8C model turbofan engines, and replacement of OBVs or related OBV link rod hardware that fail inspection. In the NPRM, the FAA proposed to require replacement of certain OBVs installed on GE CF34-8C model turbofan engines as a terminating action to the repetitive inspections. In the NPRM, the FAA also proposed to require replacement of certain OBVs installed on GE CF34-8E model turbofan engines. The FAA is issuing this AD to address the unsafe condition on these products.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from four commenters. The commenters were Air Line Pilots Association, International (ALPA), Horizon Air, Japan Airlines (JAL), and SkyWest Airlines, Inc. (SkyWest). The following presents the comments received on the NPRM and the FAA's response to each comment.

Request to Add Guidance for OBVs with Unknown Flight Hours (FHs) Since New

Horizon Air requested that the FAA provide guidance for compliance with the Required Actions, paragraphs (g)(4) and (5), in the event the FHs since new of the OBV is unknown. Horizon Air commented that paragraphs (g)(4) and (5) of the NPRM would

require replacement of the OBV with a part eligible for installation within prescribed periods, which are predicated on the FHs since new of the OBV. Horizon Air reasoned that the NPRM does not include guidance for replacing an OBV if the FHs since new of the OBV is unknown.

In response to this comment, the FAA has added paragraph (g)(6) to this AD, allowing use of the FHs since new of the engine if the accumulated FHs since new of the OBV is unknown.

Request to Clarify the Reference Date for OBV FHs Since New

JAL requested that the FAA update paragraph (g)(4) of this AD to include a reference date for OBV FHs since new. JAL noted that although paragraph (g)(4) of the NPRM has the OBV FHs since new, it does not provide a reference date.

The FAA revised paragraphs (g)(4)(i) through (iii) of this AD to identify the reference date as requested by the commenter.

Request to Add Service Information Note to the Required Actions

JAL requested that the FAA add a note referenced in GE CF34-8E Service Bulletin (SB) 75-0021 R00 to the Required Actions, which states, “For all OBVs, if the OBV was upgraded per S/B 75-0018 or the OBV cap was replaced per GEK 117619, CF34-8E Component Maintenance Manual (CMM), 80-12-41, Revision 03 or higher, the flight hours since upgrade or flight hours since the cap was replaced, as applicable, can be used instead of flight hours since new.”

In response to JAL’s request, the FAA added paragraph (g)(7) to this AD.

Comments on the Costs of Compliance

SkyWest commented that they have found the costs to convert part number (P/N) 4123T71P02 or P/N 4123T71P03 are closer to \$25,000 to \$30,000 than the estimated \$17,000 stated in the NPRM. SkyWest also commented that replacing the OBV on CF34-8E engines would take more than the 2 hours estimated in the NPRM. SkyWest reasoned that in their experience, it could take 8 hours to replace the OBV on CF34-8E engines.

In response to SkyWest’s comment regarding the estimated costs to replace the OBV, the FAA updated the estimated parts costs from \$17,230 to \$20,330 in the Costs of Compliance section of this AD. The FAA disagrees with revising the estimated labor cost

to replace the OBV. The cost analysis in AD rulemaking actions typically includes only the costs associated with complying with the AD and does not include secondary costs. The FAA's cost estimate includes the estimated work hours and parts costs to perform the required actions.

Comments on Part Supply Shortages

SkyWest noted concerns with OBVs modified to P/N 4123T71P06 since only the original equipment manufacturer (OEM) could modify the OBVs. SkyWest also commented that the OEM is currently having parts supply shortages that could jeopardize modifying the OBVs in the required timeline as proposed in paragraphs (g)(3) and (4) of the NPRM.

In response to SkyWest's comments, GE has communicated with the supplier and confirmed there is sufficient capacity and margin to meet the compliance times required by this AD. GE has also requested that the supplier plan improvements for engagement and logistics with the operators.

Support for the AD

ALPA expressed support for the AD as written.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting the AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

The FAA reviewed GE CF34-8C SB 75-0020 R04, dated May 10, 2019 (GE SB 75-0020). This SB specifies procedures for inspecting the bleed air manifold link rod assemblies; the supply, return, and drain fuel fittings; and the fuel tubes on the OBV. This SB also specifies procedures for performing corrective actions and replacing any OBVs or related OBV link rod hardware that fail the inspection criteria. The Director of the

Federal Register approved the incorporation by reference of GE SB 75-0020 as of December 23, 2019 (84 FR 63569, November 18, 2019).

The FAA reviewed GE CF34-8C SB 75-0025 R01, dated August 1, 2019. This SB specifies procedures for replacing and upgrading the suspect population of OBVs VIN 5000728-104 (P/N 4123T71P02), VIN 5000728-106 (P/N 4123T71P03), and VIN 5080046-101 (P/N 4123T71P04).

The FAA reviewed GE CF34-8E SB 75-0019 R01, dated August 1, 2019. This SB specifies procedures for replacing and upgrading the suspect population of OBVs VIN 5000728-104 (P/N 4123T71P02), VIN 5000728-106 (P/N 4123T71P03), and VIN 5080046-101 (P/N 4123T71P04).

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Other Related Service Information

The FAA reviewed GE CF34-8C SB 75-0026 R00, dated February 21, 2020. This SB introduces OBV VIN 5080046-103 (P/N 4123T71P06).

The FAA also reviewed GE CF34-8E SB 75-0021 R00, dated February 21, 2020. This SB introduces OBV VIN 5080046-103 (P/N 4123T71P06).

Costs of Compliance

The FAA estimates that this AD affects 1,172 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Replace OBV	2 work-hours x \$85 per hour = \$170	\$20,330	\$20,500	\$24,026,000
Inspect OBV fuel tubes, assemblies, and fittings	1 work-hour x \$85 per hour = \$85	\$0	\$85	\$99,620

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection. The agency has no way of determining the number of aircraft that might need this replacement.

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace OBV tubes, clamps, and link rod hardware	2.25 work-hours x \$85 per hour = \$191.25	\$3,786.25	\$3,977.50

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA has determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive 2019-22-05, Amendment 39-19784 (84 FR 63569, November 18, 2019); and

b. Adding the following new airworthiness directive:

2022-09-14 General Electric Company: Amendment 39-22034; Docket No. FAA-2021-1167; Project Identifier AD-2021-00823-E.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2019-22-05, Amendment 39-19784 (84 FR 63569, November 18, 2019).

(c) Applicability

This AD applies to General Electric Company (GE) CF34-8C1, CF34-8C5, CF34-8C5A1, CF34-8C5B1, CF34-8C5A2, CF34-8C5A3, CF34-8E2, CF34-8E2A1, CF34-8E5, CF34-8E5A1, CF34-8E5A2, CF34-8E6, and CF34-8E6A1 model turbofan engines.

(d) Subject

Joint Aircraft System Component (JASC) Code 7532, Compressor Bleed Valve.

(e) Unsafe Condition

This AD was prompted by multiple reports of fuel leaks, some leading to engine fires, which have occurred as a result of malfunctions related to the operability bleed

valve (OBV). The FAA is issuing this AD to prevent failure of the OBV. The unsafe condition, if not addressed, could result in an engine fire and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For CF34-8C1, CF34-8C5, CF34-8C5A1, and CF34-8C5B1 model turbofan engines with serial numbers (S/Ns): 965101 through 965670 inclusive; 194101 through 194999 inclusive; and 195101 through 195653 inclusive:

(i) Within 880 flight hours (FHs) since the previous inspection, 500 FHs after December 23, 2019 (the effective date of AD 2019-22-05), or 6,880 FHs since new, whichever occurs later, inspect the OBV bleed air manifold link rod assemblies, the OBV fuel fittings, and the OBV fuel tubes.

(ii) Thereafter, within every 880 FHs since the previous inspection, perform additional repeat inspections of the OBV bleed air manifold link rod assemblies, the OBV fuel fittings, and the OBV fuel tubes.

(iii) Use the Accomplishment Instructions, paragraph 3.B., of GE CF34-8C Service Bulletin (SB) 75-0020 R04, dated May 10, 2019 (GE SB 75-0020), to perform inspections required by paragraphs (g)(1)(i) and (ii) of this AD and, per the inspection criteria in paragraph 3.B., of GE SB 75-0020 (the inspection criteria), do the following:

(A) Before further flight, if fuel leakage is observed at the OBV fuel fittings or the OBV fuel fittings are loose, replace the OBV with a part eligible for installation.

(B) Before further flight, if any OBV fuel tube clamp is found to be outside the inspection criteria, re-torque the OBV fuel tube clamp or replace the OBV fuel tube clamp.

(C) Within 50 flight cycles (FCs) after the inspections required by paragraphs (g)(1)(i) and (ii) of this AD, replace any link rod hardware found to be outside the inspection criteria. Until the worn link rod hardware is replaced, the OBV fuel fittings must be inspected before the first flight of each day for leakage and looseness in accordance with the inspection criteria. If the OBV fuel fittings fail to meet the inspection criteria, before further flight, replace the OBV and worn link rod hardware.

(2) For CF34-8C5B1 model turbofan engines with S/Ns not listed in paragraph (g)(1) of this AD and for all CF34-8C5A2 and CF34-8C5A3 model turbofan engines, perform the following:

(i) Within 880 FHs after the effective date of this AD or prior to accumulating 6,880 FHs since new, whichever occurs later, perform an initial inspection of the OBV bleed air manifold link rod assemblies, OBV fuel fittings, and OBV fuel tubes.

(ii) Thereafter, within every 880 FHs since the last inspection, repeat the inspection of the OBV bleed air manifold link rod assemblies, OBV fuel fittings, and OBV fuel tubes.

(iii) Use the Accomplishment Instructions, paragraph 3.B., of GE SB 75-0020, to perform the inspections in paragraph (g)(2)(i) and (ii) of this AD and, per the inspection criteria in paragraph 3.B., of GE SB 75-0020, do the following:

(A) Before further flight, if fuel leakage is observed at the OBV fuel fittings or the OBV fuel fittings are loose, replace the OBV with a part eligible for installation.

(B) Before further flight, if any OBV fuel tube clamp is found to be outside the inspection criteria, re-torque the OBV fuel tube clamp or replace the OBV fuel tube clamp.

(C) Within 50 FCs after the inspections required by paragraphs (g)(2)(i) and (ii) of this AD, replace any link rod hardware found to be outside the inspection criteria. Until the worn link rod hardware is replaced, the OBV fuel fittings must be inspected before the first flight of each day for leakage and looseness in accordance with the inspection criteria. If the OBV fuel fittings fail to meet the inspection criteria, before further flight, replace the OBV and worn link rod hardware.

(3) For all affected engines with an installed OBV, VIN 5000728-104 part number (P/N) (P/N 4123T71P02), VIN 5000728-106 (P/N 4123T71P03), or VIN 5080046-101 (P/N 4123T71P04), having an OBV S/N listed in Appendix A, paragraph 4., of GE CF34-8C SB 75-0025 R01, dated August 1, 2019 (GE SB 75-0025), or Appendix A, paragraph 4., of GE CF34-8E SB 75-0019 R01, dated August 1, 2019 (GE SB 75-0019), respectively, within 180 days after the effective date of this AD, remove the OBV and replace with a part eligible for installation.

(4) For all affected engines with an installed OBV, VIN 5000728-104 (P/N 4123T71P02), VIN 5000728-106 (P/N 4123T71P03), or VIN 5080046-101 (P/N 4123T71P04), having an OBV S/N not listed in Appendix A, paragraph 4., of GE SB 75-0025 or Appendix A, paragraph 4., of GE SB 75-0019, respectively, remove the OBV and replace with a part eligible for installation within the following compliance times:

(i) For an OBV that has accumulated more than 25,000 FHs since new as of the effective date of this AD, remove and replace the OBV within 16 months of the effective date of this AD.

(ii) For an OBV that has accumulated between 12,500 to 25,000 FHs since new, inclusive, as of the effective date of this AD, remove and replace the OBV within 32 months of the effective date of this AD.

(iii) For an OBV with fewer than 12,500 FHs since new as of the effective date of this AD, remove and replace the OBV within 48 months of the effective date of this AD.

(5) For all affected engines with an installed OBV, VIN 5080046-102 (P/N 4123T71P05), before the OBV accumulates 25,000 FHs since new or within 10 years of the effective date of this AD, whichever occurs first, remove the OBV and replace with a part eligible for installation.

(6) For all affected engines with an installed OBV, if the accumulated FHs since new of the OBV is unknown, use the FHs since new of the engine.

(7) If the OBV was upgraded or the OBV cap was replaced using the service information identified in paragraph 1., Planning Information, paragraph C., Compliance, of GE CF34-8E SB 75-0021 R00, dated February 21, 2020, the accumulated FHs since the OBV was upgraded or accumulated FHs since the OBV cap was replaced, as applicable, may be used instead of accumulated FHs since new of the OBV.

(h) Terminating Action

Installation of an OBV that meets the definition of a part eligible for installation in paragraph (i) of this AD constitutes terminating action for the inspections required by paragraphs (g)(1) and (2) of this AD.

(i) Definition

For the purpose of this AD, a “part eligible for installation” is an OBV VIN 5080046-103 (P/N 4123T71P06) or an OBV reworked to VIN 5080046-103 (P/N 4123T71P06).

(j) No Reporting Requirement

The reporting instructions specified in GE SB 75-0020 are not required by this AD.

(k) Credit for Previous Actions

You may take credit for the initial inspection required by paragraph (g)(1)(i) or (2)(i) of this AD if you performed this initial inspection before the effective of this AD using GE CF34-8C SB 75-0019 R01, dated October 24, 2017, or R00, dated August 4, 2017; or GE CF34-8C-AL S/B 75-0020, Revision 03, dated December 14, 2018, as applicable.

(l) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ECO Branch, send it to the attention of the person identified in paragraph (m) of this AD and email to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(m) Related Information

For more information about this AD, contact Scott Stevenson, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7132; fax: (781) 238-7199; email: Scott.M.Stevenson@faa.gov.

(n) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(i) GE CF34-8C Service Bulletin (SB) 75-0025 R01, dated August 1, 2019.

(ii) GE CF34-8E SB 75-0019 R01, dated August 1, 2019.

(4) The following service information was approved for IBR on December 23, 2019 (84 FR 63569, November 18, 2019).

(i) GE CF34-8C SB 75-0020 R04, dated May 10, 2019.

(ii) [Reserved]

(5) For service information identified in this AD, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ge.com; website: <https://www.ge.com>.

(6) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: fr.inspection@nara.gov, or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on May 16, 2022.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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